

CLAIMS

[0081]

1. A method for producing a thermoplastic resin composition  
5 containing ultrafine particles, the method comprising mixing  
a metal-containing organic compound with a thermoplastic  
resin; and then heating the resulting mixture at a  
temperature of at least the decomposition starting  
temperature and lower than the complete decomposition  
10 temperature of the metal-containing organic compound to  
produce a composition containing ultrafine metal particles  
and/or ultrafine metal oxide particles having a number-  
average particle size of 0.1 to 80 nm dispersed in the  
thermoplastic resin.

15 [0082]

2. The method for producing the thermoplastic resin  
composition containing ultrafine particles according to  
claim 1, wherein the ultrafine metal particles and/or the  
ultrafine metal oxide particles having a number-average  
20 particle size of 0.1 to 80 nm dispersed in the thermoplastic  
resin is composed of a metal component or a metal oxide  
component, and an organic component is bonded to the surface  
of the particle.

[0083]

25 3. The method for producing the thermoplastic resin

composition containing ultrafine particles according to claim 1 or 2, wherein the ultrafine particles having a number-average particle size of 0.1 to 80 nm dispersed in the thermoplastic resin are synthesized in the thermoplastic resin.

[0084]

4. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 3, wherein the heating temperature is not lower than the decomposition starting temperature of the metal-containing organic compound, lower than the complete decomposition temperature of the metal-containing organic compound, and higher than the melting point of the thermoplastic resin.

[0085]

5. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 4, wherein the metal component is at least one element selected from Cu, Ag, Au, Zn, Cd, Ga, In, Si, Ge, Ti, Sn, Pd, Fe, Co, Ni, Ru, Rh, Os, Ir, Pt, V, Cr, Mn, Y, Zr, Nb, Mo, Ca, Sr, Ba, Sb, and Bi.

[0086]

6. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 5, further comprising exposing the

resulting melted thermoplastic resin composition to a reduced pressure equal to or lower than atmospheric pressure after the metal-containing organic compound is heated at a temperature of not lower than the decomposition starting  
5 temperature of the metal-containing organic compound, lower than the complete decomposition temperature of the metal-containing organic compound, and higher than the melting point of the thermoplastic resin.

[0087]

- 10 7. The method for producing the thermoplastic resin composition containing ultrafine particles according to any one of claims 1 to 6, the method further comprising kneading the melted thermoplastic resin and the metal-containing organic compound to disperse ultrafine metal particles  
15 and/or ultrafine metal oxide particles in the thermoplastic resin, wherein the central portion of the particle is composed of a metal component or a metal oxide component, an organic component is bonded to the surface of the particle, and the particles dispersed have a number-average particle  
20 size of 1 to 60 nm.